

LISTING OF CLAIMS:

1. (Currently amended) A vehicle brake control apparatus comprising:
a brake commanding element for making a judgment based on input information as to whether a vehicle should decelerate or not and for generating a brake command when it is determined that the vehicle should decelerate;

a braking element for applying brake on the vehicle with a predetermined braking force corresponding to said brake command generated by said brake commanding element; and

a braking force restricting element for restricting a maximum value of said braking force to be generated by said braking element in response to said brake command to a value smaller by a predetermined ratio than an estimated maximum braking force being estimated based on information relating to a road surface friction coefficient,

wherein

said brake commanding element commands an automatic brake operation carried out for automatically decelerating the vehicle when it is judged that there is a prospective danger of vehicle collision or there is a necessity of securing safety of the vehicle based on entered collision danger information relating to collision danger of the vehicle relative to a forward obstacle or relevant information for vehicle safety,

said braking force restricting element sets a maximum value of an automatic braking force, being said braking force to be generated by said braking element during said automatic brake operation, to a value smaller by a predetermined ratio than said estimated maximum braking force, and

said braking force restricting element increases said braking force within a range of said estimated maximum braking force, when a driver applies none of manual braking, manual

steering, and manual accelerating operations when a predetermined time has elapsed after said automatic brake operation is started.

2. (Canceled)

3. (Currently amended) The vehicle brake control apparatus in accordance with claim 21, wherein said braking force restricting element sets ~~a~~the maximum value of said automatic braking force to somewhere in a range corresponding to 5% to 60% of said estimated maximum braking force.

4. (Currently amended) The vehicle brake control apparatus in accordance with claim 12, wherein said braking force restricting element sets a braking force higher than an inherent braking force corresponding to a manual brake operation amount, within the range of said estimated maximum braking force being estimated based on said road surface friction coefficient, when a manual braking operation is carried out during said automatic brake operation.

5. (Currently amended) The vehicle brake control apparatus in accordance with claim 12, wherein said braking force restricting element sets a braking force higher than an inherent braking force corresponding to a manual brake operation amount, regardless of said estimated maximum braking force, when a manual braking operation is carried out during said automatic brake operation.

6. (Canceled)

7. (Currently amended) ~~The~~A vehicle brake control apparatus ~~in accordance with claim 1,~~comprising:

a brake commanding element for making a judgment based on input information as to whether a vehicle should decelerate or not and for generating a brake command when it is determined that the vehicle should decelerate;

a braking element for applying brake on the vehicle with a predetermined braking force corresponding to said brake command generated by said brake commanding element; and

a braking force restricting element for restricting a maximum value of said braking force to be generated by said braking element in response to said brake command to a value smaller by a predetermined ratio than an estimated maximum braking force being estimated based on information relating to a road surface friction coefficient,

wherein said braking force restricting element allows ~~the~~an automatic brake operation in which the braking force is maximized when it is judged that the possibility of avoiding vehicle collision by steering is lower than a predetermined rate.

8. (Currently amended) ~~The~~A vehicle brake control apparatus ~~in accordance with claim 1,~~comprising:

a brake commanding element for making a judgment based on input information as to whether a vehicle should decelerate or not and for generating a brake command when it is determined that the vehicle should decelerate;

a braking element for applying brake on the vehicle with a predetermined braking force corresponding to said brake command generated by said brake commanding element; and

a braking force restricting element for restricting a maximum value of said braking force to be generated by said braking element in response to said brake command to a value smaller by

a predetermined ratio than an estimated maximum braking force being estimated based on information relating to a road surface friction coefficient,

wherein

said brake commanding element commands a warning brake operation carried out for decelerating the vehicle as a warning given to a driver when it is judged that there is a prospective danger of vehicle collision or there is a necessity of securing safety of the vehicle based on entered collision danger information relating to collision danger of the vehicle relative to a forward obstacle or relevant information for vehicle safety, and

said braking force restricting element sets a maximum value of a warning braking force, being said braking force to be generated by said braking element during said warning brake operation, to a value smaller by a predetermined ratio than said estimated maximum braking force.

9. (Currently amended) The vehicle brake control apparatus in accordance with claim 8, wherein said braking force restricting element sets atthe maximum value of said warning braking force to somewhere in a range corresponding to 5% to 60% of said estimated maximum braking force.

10. (Currently amended) The vehicle brake control apparatus in accordance with claim 8, wherein said braking force restricting element sets a braking force higher than an inherent braking force corresponding to a manual brake operation amount, within ~~the~~a range of said estimated maximum braking force being estimated based on said road surface friction coefficient, when a manual braking operation is carried out during said warning brake operation.

11. (Original) The vehicle brake control apparatus in accordance with claim 8, wherein said braking force restricting element sets a braking force higher than an inherent braking force corresponding to a manual brake operation amount, regardless of said estimated maximum braking force, when a manual braking operation is carried out during said warning brake operation.

12. (Canceled)

13. (Currently amended) A method for controlling an automatic vehicle braking apparatus comprising the steps of:

judging as to whether a vehicle should decelerate or not;

restricting a maximum value of a braking force to be generated by said automatic vehicle braking apparatus to a value smaller by a predetermined ratio than an estimated maximum braking force being estimated based on information relating to a road surface friction coefficient;

generating a brake command with reference to said maximum value of the braking force to be generated by said automatic vehicle braking apparatus, when it is determined that the vehicle should decelerate; ~~and~~

actuating said automatic vehicle braking apparatus to apply brake on the vehicle in accordance with said brake command, thereby carrying out an automatic brake operation; and

increasing the braking force to be generated by said automatic vehicle braking apparatus within a range of said estimated maximum braking force, when a driver applies none of manual braking, manual steering, and manual accelerating operations when a predetermined time has elapsed after said automatic brake operation or said warning brake operation is started.

14. (Original) The method for controlling an automatic vehicle braking apparatus in accordance with claim 13, wherein the maximum value of the braking force to be generated by said automatic vehicle braking apparatus is set to somewhere in a range corresponding to 5% to 60% of said estimated maximum braking force.

15. (Original) The method for controlling an automatic vehicle braking apparatus in accordance with claim 13, wherein the braking force to be generated by said automatic vehicle braking apparatus is set to be higher than an inherent braking force corresponding to a manual brake operation amount when a manual braking operation is performed during said automatic brake operation.

16. (Canceled)

17. (Currently amended) ~~The~~ A method for controlling an automatic vehicle braking apparatus ~~in accordance with claim 13, comprising the steps of:~~

judging as to whether a vehicle should decelerate or not;

restricting a maximum value of a braking force to be generated by said automatic vehicle braking apparatus to a value smaller by a predetermined ratio than an estimated maximum braking force being estimated based on information relating to a road surface friction coefficient;

generating a brake command with reference to said maximum value of the braking force to be generated by said automatic vehicle braking apparatus, when it is determined that the vehicle should decelerate;

actuating said automatic vehicle braking apparatus to apply brake on the vehicle in accordance with said brake command; and

~~wherein the~~carrying out an automatic brake operation ~~is carried out~~ with a maximized braking force when it is judged that the possibility of avoiding vehicle collision by steering is lower than a predetermined rate.

18. (New) The method for controlling an automatic vehicle braking apparatus in accordance with claim 17, wherein the maximum value of the braking force to be generated by said automatic vehicle braking apparatus is set to somewhere in a range corresponding to 5 % to 60 % of said estimated maximum braking force.

19. (New) The method for controlling an automatic vehicle braking apparatus in accordance with claim 17, wherein the braking force to be generated by said automatic vehicle braking apparatus is set to be higher than an inherent braking force corresponding to a manual brake operation amount when a manual braking operation is performed during said automatic brake operation.